cures and Wickham [21] treated telangeictases, caused by the X ray, with excellent results.

The best results are obtained where the blood vessels lie in the skin, but with deep cavernous angiomata, where destruction is impossible, undesirable or dangerous, a very satisfactory covering of connective tissue is produced, which is smooth and has a texture hardly distinguishable from normal skin. A case of a large hypertrophic naevus of the scalp of bright red color and raspberry-like surface, treated by the author with carbon dioxide snow, now presents a slightly elevated, smooth, white surface, bearing a fairly profuse growth of hair where apparently none existed prior to treatment. This, of course, is not a curative procedure, but as a cosmetic process by which the more obvious and distressing lesions may be concealed, it certainly must be recognized as a distinct addition to our therapeutic armamentarium.

Bad Results.—Occasionally the application is followed by a neuralgia, especially when the area treated is over the site of emergence of a nerve, but this is only transient, passes away in 2 or 3 hours, and is easily controlled with hot applications; it is also possible that an incompetent or incautious operator will produce, by over treatment, a hard white ivory-like scar, or a depressed one, but these are errors of technique. Janeway [19] reports of lupus erythematosus, treated with the snow, in which an epithelioma developed, but, as his had been previously treated with the X ray, it is far more probable that the lesion was due to the first treatment. Heidensfeld [24] also reports a case, in a 4-year-old child, where, some time following the treatment of a large angioma of the forearm, the lesion became the seat of an acute inflammatory process with multiple, actively purulent, foul smelling and somewhat gangrenous ulcerations, which resisted all forms of local treatment, and with no attributable cause. This is the only really bad result reported in many hundreds of cases, and was, in all probability, not due to the snow.

After-Treatment.—As a rule, the less treatment applied to the lesion the better the result; a simple ointment of equal parts of ung. zinci oxidi and vaseline will suffice to protect the parts and alleviate any sense of discomfort; outside of this it is not necessary to carry out any treatment except in those cases where a slight oozing occurs on separation of the crust, which not infrequently happens in large hypertrophic naevi. This is, however, of no moment, and is readily controlled, without the aid of a physician, by the pressure of pledgets of cotton soaked in peroxide of hydrogen.

Conclusions.—We have then, in carbon dioxide snow, a simple, effectual, comparatively painless, bloodless and certain agent which is far preferable to any other remedy in point of rapidity, ease of execution from the standpoint of the operator, and tolerance on the part of the patient; and, since the great majority of these patients are children, painlessness and rapidity are of prime importance. Furthermore, the cosmetic result cannot be excelled, and seldom equalled by any other agent, and, in that class of cases where a radical cure is not obtained, it is a safe and efficient method for relieving the disagreeable disfigurement which causes the patient so much discomfort and annoyance.

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MISTAKES IN MEDICAL EDUCATION.*

By DUDLEY TAIT, San Francisco.

It affords me sincere pleasure to express publicly my admiration for the highmindedness that has characterized the conduct of the Oakland College of Medicine, its strict adherence to absolute honesty in the face of temptation, its loyalty to sound principles, and above all, its freedom from the taint of commercialism.

My admiration is enhanced by the obviously ephemeral character of such an institution; for it is no longer possible to maintain a modern medical school on the basis of personal sacrifice.

The faculty should find both hope and encouragement in the knowledge that the State University was born in Oakland, under the name of California College, at the corner of Fourteenth and Webster streets.

As a contrast, I crave your attention this evening to a few sketchy impressions and observations, based upon eight years' experience as a state medical official.

The most salient fact demonstrated by a methodical and persistent investigation of over eighty medical colleges of this country was their flagrant deviation from, not to say contempt for, the written law. This wholesale shortcircuiting of what commonly constitutes honesty in commercial and industrial lines was noted in the small as well as in the large schools, in humble quarters as well as in great centers. My stenographer sent a letter to fifty colleges, the published announcements of which made a high

* An address delivered at the graduating exercises of the Oakland College of Medicine.

school diploma the minimum matriculation requirement, advising the dean of her desire to begin the study of medicine, and calling his attention very explicitly to the fact that her preliminary training consisted only of an incomplete grammar school course. She also stated her willingness to make any necessary pecuniary sacrifice in order to reach the goal of her ambition, the degree of M. D.

Within a week our mail carrier showed signs of fatigue; never before had telegrams been left in such numbers at my office. Two replies contained advice of the highest order as to the necessity of a thorough preliminary training prior to entering upon the career of medicine. In the vast majority of cases, however, unconditional matriculation was granted. A Kansas dean wired his willingness to meet the young lady at the depot. A Texas dean wrote effusively: "Enchanted to hear from you. Hope you will come soon. Tell me more of yourself in your next letter."

Thus, fraudulent, dishonest methods inveigle the naive, poorly equipped matriculant, follow and contaminate him during his much abbreviated annual courses, and then foist him upon the unsuspecting public, to sing the praises of his commercially steeped Alma Mater, bring discredit, if not disgrace, upon the title of M. D. and eventually swell the ranks of that worst of social vampires—the quack. How could it be otherwise if the stream is polluted at its origin, if colleges seek to enrich themselves through wholesale violations of the laws regulating the practice of medicine, and fail to even observe the conditions enumerated in their own published announcements? In business circles such methods are considered violations of contract and made amenable to criminal law. The practice, however, has been prevalent in the medical schools of this country for so many decades that the element of fraud no longer surprises. In most of the states, Boards of Examiners have the power to adjust these conditions, but unfortunately these quasi-judicial bodies, designed primarily for the protection of the public, have not always kept faith with the people; many have been false to their oath of office and have wilfully neglected those sections of the statute regulating the character and extent of medical education.

Indeed, state medical examiners seldom avail themselves of the splendid educational opportunities delegated to them by legislatures. Only a few years ago California was credited with the possession of the highest standard of examinations for licensure. To-day, by reason of endless exemptions accorded organized pathies and isms (naturopaths), cancer fakers and healers, failure to investigate medical colleges, non-enforcement of the legal minimum standard of qualifications as determined annually by the Association of American Medical Colleges, neglect to extend what this State first inaugurated, i. e., practical examinations, and finally the astounding lowering of the marking system enacted by the recent legislature, to-day the California medical act has been robbed of almost all its power for good and relegated to the Massachusetts level—the lowest in the United States. Alone among the States, California may boast of having increased the number of its medical colleges during the past half decade. The matriculation list of one of the Los Angeles schools of Osteopathy exceeds the total enrollment of the ten medical colleges of the Pacific Coast.

The conclusion is self-evident: neither the profession nor the public wanted a high standard of medical education in California. We seem to be advancing rapidly toward the open door policy, thus hastening the inevitable realization of the socialistic dream of state control of health services and of medical education. But let us return to our muttons, the medical colleges.

Is it astonishing, with fraud written all over medical college announcements, that 15 per cent. of the graduates in medicine throw aside their sheepskins and seek other fields of labor prior to their third year of practice? Such are, nevertheless, the conditions prevailing in this country, and no other country can attempt to duplicate this eloquent but lamentable record of failures, failures almost invariably directly traceable to that shameless American product—the greedy, predatory, short-cut, proprietary medical school. May it not, therefore, be asked with some degree of propriety if medical schools are not largely responsible for the distrust of scientific opinion so prevalent in this democratic country?

In the opinion of many, the mere increasing of matriculation requirements constitutes the essential, if not the only means of raising the standard of medicine. While no one will deny the desirability of a training in the fundamentals prior to entering upon a medical career, one is, nevertheless, justified in asking if the medical teaching faculty has advanced *pari passu* with the medical student body. After prolonged search I fail to see it.

Has the clinician made a corresponding sacrifice of time or adapted himself to the standard of his biologically trained audience? In his honest endeavor to recede from time-worn didactic methods of teaching, has he broken absolutely with tradition and espoused the cause of scientific principles? Has he practiced less and investigated more? How many schools would dare answer affirmatively?

Perhaps the solution will be found in the gradual development of a new type of teacher: the university clinician, capable both of intelligently bridging the academic and clinical years and of establishing a more profitable co-operation between the various departments of the university.

The fundamental question is, how may the necessarily limited time of medical education be most profitably employed in imparting to the student such knowledge as is most useful to him in his future career? How has the faculty answered this question? In the majority of instances, by confronting the student with additional subjects, additional courses, additional units, additional text-book details, additional parrot-like recitations, and with it all the four-year system is still religiously adhered to. It is just this cramming process and especially the unfortunate appropriation of time by the teachers in the intermediate subjects that causes tired and neurasthenic students; the able men are severely maimed, the weaklings are ruined for life as they become veneered with prejudice, having never learned to think for themselves or to work unaided. Starling aptly remarks that in giving his whole soul to his work the student loses his soul. How can we expect a tired student to exercise a trained reflective and analytic habit of mind on the numerous problems which present themselves?

Some medical schools of the ambitious university type have, I am convinced, reached the height of pedagogic absurdity in their endeavor to elevate the standard of medical education.

To discover and to teach are distinct functions; they are also distinct gifts and are not commonly united in the same person. While teaching involves external engagements, the natural home for experiment and speculation is retirement. Failure to appreciate the difference between the dissemination of knowledge and the advance of knowledge, has given rise to much confusion of thought and a tremendous loss of time and energy.

Is it not prostituting science to expect an eminent research man to teach freshmen? Is it not wholly unjust to both? Again, why should medical men be taught by physicists who know nothing of the physics required in physiology and practical medicine, and by chemists whose interest does not lie in the problems of pathological and physiological chemistry? Were it not better that chemistry be taught by the physiological physicist, by medical men who have gone through the whole training and know the needs and aim of practical medicine? At the beginning of their career, medical students become the sport of biologists, who use them as the flotsam and jetsam of their seas of learning and oceans of theories. "Biology as taught by non-medical men must go."* Teachers of anatomy must not forget that surgery is the proof of anatomy. Minute descriptive anatomy should not be allowed to crowd out applied anatomy, to the ultimate embarrassment of the junior student who enters the operating-room or faces the course in operative surgery.

We should weigh carefully the suggestion made by the world-renowned biologist, Jacques Loeb—that the prevailing mode of teaching anatomy, i. e., from the morphological viewpoint, has an atrophying effect upon the student's scientific interest and should give way to the functional method of teaching.

The ordinary student who is destined to become a general practitioner ought not to be required to spend time on the acquisition of knowledge which he will never use. The whole of his studies should have a distinct bearing on, and lead up to, the knowledge of the human body and its control in disease. The whole medical college should not be compelled to spend a disproportionate amount of time and energy upon subjects which will be of real use to a very few only, whilst subjects of the greatest importance have to be neglected in proportion to the amount of time devoted to ultra scientific matters. The accessory sciences must of necessity be subordinated to the highest purpose in the education of the medical man—to make him fit for the exercise of his future duties.

Were some medical faculties to pause and remember the immortal words uttered two thousand years ago by the Father of Medicine, "Art is long, time is short and technique is difficult," they would abandon the role of precedent worshipers, extend the medical rather than the premedical curriculum, cease developing the student's memorial powers, stop training parrots, get rid of "antiquated dictionary stuff," abolish the monastic system of examinations, and thus eliminate the large element of lottery, lead the student to the bedside at a much earlier date, devote three-quarters of the curriculum to clinical work, make the teacher responsible for the student, restore the old time close relation between the teacher and the student, and thus contribute to the primary aim of education, the formation of character and intellect.

"True and complete success in life requires more than mere aptness for learning, or the possession of a retentive memory, or facility of written or oral expression, or mere energy and zeal."

A man may possess all of these qualities and still lack the one indispensable requisite to ensure success in practical affairs—character—character and all that this term connotes, thoughtfulness, sympathy, courtesy and culture."

The teacher of the future must establish a forward outlook and instill hope in the student's mind. Hope, the dominant feature of modern thought, hope for the morrow, hope for the future, anticipation of something better, some improvement, or, at the very least, some change. Hope is the keynote of progress and the certain safeguard against retrogression.

* The writer was more profoundly impressed by the discussion on the scientific education of the medical student at the 76th annual meeting of the British Medical Association than by all other similar addresses. (Br. Med. J., Aug. 15, 1908.)

SOME POINTS TO BE CONSIDERED IN FEEDING INFANTS.*

By LANGLEY PORTER, M. D., San Francisco.
From the Children's Clinic of Cooper Medical College.

A simple enumeration of those digestive juices and ferments which are known to be essential must comprise at least fifteen substances, most of which

* Read in the Oakland Medical College Lecture Course, March 22, 1911.